ON THE IMPORTANCE OF PRIMARY SUTURE OF DIVIDED NERVES, WITH AN ILLUSTRATIVE CASE OF SUCCESSFUL SUTURE OF THE MEDIAN AND ULNAR NERVES.

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BY CHARLES B. NANCREDE, M.D.,
OF PHILADELPHIA.

Although I have a most profound faith in the *vis medicatrix naturæ*, I still think that Dame Nature should always have fair play in her battle with injury or disease, and this she certainly fails to receive at the hands of too many practitioners.

In a paper published some fifteen years ago I contended that if, with such vascular structures as those of the face, which certainly would unite sooner or later in some sort of fashion, we habitually resorted to suture, merely for cosmetic effects, we were all the more bound to do so for such avascular structures as tendons, which, if they failed to heal well, much more if no union was secured, must entail disability or total uselessness of a member. Now-a-days a surgeon who should fail to suture a divided tendon would be considered derelict in his duties. In like manner, I trust that in the near future the general practitioner will be so impressed with its importance that he will consider that his duty is unfulfilled until he, or some surgeon summoned by him, has sutured any divided nerve.

It is needless for me to dilate upon the evils consequent upon the abolition of function of an important nerve, but I would recall to your minds cases which must have occurred in the practice of most of those present, where divisions of even such small trunks as digital nerves have resulted in troublesome ulcerations, causalgias, etc.

Doubtless the indifference of practitioners to wounds of nerves; or, more strictly speaking, their inclination to "leave them to Nature," has arisen from two causes, viz.: 1, the fear that suturing might in some way determine tetanus; and 2, the well known fact that nerves divided or even excised with the avowed intention of abrogating their function, too commonly reunite.

The first cause should not deter us, as we now know that a suture, *per se*, can never originate tetanus; while as to the second objection, certain facts which I shall submit for your consideration warrant the conclusion that traumatic divisions of nerves, unless effected by a clean cut—or perhaps ball wounds—involving solely the nerve and little, if any, of the contiguous structures, differ so materially from those purposely effected by the surgeon's knife, that conclusions derived from the result of neurectomies cannot safely be applied to accidental divisions of nerves.

Besides, granting that reunion will occur without suturing, as a stitch can do no harm, why not use one, since it will at least conduce to a more rapid resumption of function? While primary union of nerves with immediate resumption of function—*i. e.*, in a week or ten days, is a surgical rarity, yet it does at times occur, and would doubtless be of more frequent occurrence, if sutures were the rule and not the exception.

My aim in this brief note is merely to call your attention, as general practitioners in whose hands many of these cases will fall, to the *duty* of suturing divided nerves as a routine practice, just as you would tie arteries, and to describe a simple, effective method of carrying out the indication.

A critical examination of the histories of nearly all exsections of nerves where reproduction has occurred, will show that they were removed either from a bony canal or from an intermuscular space in which they normally laid, *with the minimum* of injury to the surrounding tissues. Moreover, even when their ends have been turned back and sutured in position or even buried in the surrounding tissues, they have been so secured in the same intermuscular space which the nerve normally traverses. In other words, the bony canals and the intermuscular spaces likewise act as moulds which direct the course of the reparative material from the proximal to the distal end of the severed nerve.

In extensive wounds, however, this condition does not obtain. Intermuscular spaces are dislocated, large masses of scar tissue are formed, so that, instead of the new nerve-tissue being *compelled* to grow in only one, and that the right direction, it has too often an inseparable barrier interposed, and union fails.

In the case which I now show you,[1] the proxima ends of the ulnar and median nerves were directed at right angles to their intermuscular space, and would have been infallibly fixed between the ends of the torn muscles in a dense mass of scar tissues, resulting in permanent loss of power of the member. In the seventh month after suture—*i. e.*, the usual period required for the degeneration and regeneration of a nerve, first sensation and then motion returned, until now, although the functions of the member are not perfect, the boy can earn his living, and do nearly all that can be effected by a normal hand and forearm.

Further quotation of my own cases or those of other surgeons seems hardly necessary, and such good results as I here show you have been frequently reported.

Finally, how should the sutures be passed and what should their material be?

Fine aseptic catgut passed by means of an ordinary sewing-needle is to be preferred, but fine aseptic silk can be used, and I myself have resorted to this in an emergency. Should the nerve be *very* much lacerated and frayed out it may, perhaps, be sometimes proper to cut off a portion to gain a clean surface, but this is rarely desirable. The needle should be passed from below upward through the proximal end of the nerve at one border, across, and then passed from above downward near the opposite

[1] In this patient the brachial artery was also torn through, leaving only a bridge of muscle and skin through which collateral circulation could be carried on. The deficient blood supply possibly explains the failure of the recovery of power in the interossei muscles, although other of the intrinsic muscles of the hand which are supplied by the ulnar nerve contract well.

border, entering the needle from ⅛ to ¼ of an inch from the cut end, according to the size of the nerve. The needle must now be passed from below upward through the distal portion of the nerve at the border corresponding to the last passage of the needle through the proximal end across, and made to pierce the nerve from above downward, when the suture will be found to correspond to the free end of the thread in the proximal piece of nerve.

Gentle traction with an appropriate position of the member will, by the tying of one knot, accurately approximate the nerve ends; in a word, by this simple method all the advantages of the two separate sutures commonly recommended are obtained with a far greater degree of security. I need not say that the strictest asepsis should be secured, which is easy enough provided the wounded part, the surgeon's hands and his instruments be strictly cleansed, and the wound be freely irrigated with the bichloride and tartaric acid solution. If the surgeon gets an uncontaminated wound, it is his own fault if he has suppuration, and even with the ordinary run of accidental wounds, if he will thoroughly scrub his hands with a nail brush and hot water, and likewise so treat the parts surrounding the wound, pour boiling water over his instruments, without any further antisepsis, in most cases healing without suppuration can be secured, while the omission of these details will mar results with gallons of mercuric solution flowing over the wound.

MEDICAL PROGRESS.

SUBCUTANEOUS SEPARATION OF TRACHEA FROM LARYNX.—At the Versammlung Deutscher Naturforscher und Aerzte last September, NOLL, of Hanau, reported the case of a workman who received a severe blow on the front part of the neck from a piece of machinery. The skin was not wounded, and only a little blood was coughed up. The neck was soon very much swollen, and attacks of suffocation soon came on. On making a tracheotomy Noll found that the trachea was separated from the larynx, and very much retracted, and that the cricoid and thyroid cartilages were fractured. The trachea was drawn up and sutured to the larynx, and a cannula was placed in the passages. Later it could not be removed because it was held in by a cicatricial contraction. The usual methods of dilatation failed, and a laryngo-fissure was made, in which a Dupuis's cannula was worn for nine months. The trachea and larynx are now grown together. The patient is in good condition, but his voice is hoarser than before.—*Deutsche med. Wochenschrift*, No. 52, 1887.

PERSONAL HEALTH-RULES IN TIME OF CHOLERA.—SANITÄTSRATH DR. PAUL SACHSE, of Berlin, acting on what he believes to be a well-grounded supposition that cholera is due to the cholera bacillus, has made out a list of personal health-rules to be freely distributed in time of cholera, so that "every one can carry a copy in his coat-pocket, and hang one on his mirror, or on the wall like a calendar." The rules that he advises are as follows:

Cholera is caused by infection with the microscopic organism called the comma-bacillus, on account of its peculiar form in cholera. These get into the human intestine, increase rapidly under favorable circumstances, and cause the peculiar symptoms of cholera. This begins always with an apparently harmless diarrhœa, which continues for several hours before the disease breaks out with force, and becomes dangerous to life.

The possibility of infecting one's self in time of cholera with that bacillus is increased a thousand fold by assemblages and intercommunication of people. The outbreak of the disease is favorably influenced by everything that causes any stomach or intestinal affection.

Since we have no absolutely certain means of controlling the disease after it has broken out, we should especially beware of becoming infected, and should take all precautions to kill or at least render as harmless as possible the cholera germ before it gets into our bodies, and by a regular mode of living and prudent deportment avoid anything that can disorder the digestive apparatus.

Since the cholera germ gets into the stomach through the mouth, and from the stomach into the intestines, we should take care:

1. To take only cooked food and drink. This is the most important rule. Even the washing, rinsing, and bathing water should be free from germs, and the water from the wells should never be used, but only that from the city pipes.

2. To keep the body clean, and especially the hands, by frequent washing, especially before meals, and this should be done with disinfecting solutions, such as a 5 per cent. solution of carbolic acid (or a ⅓ per cent. solution of sublimate), and of this in time of cholera at least a quart should be used for washing the hands.

3. To live judiciously and carefully in time of cholera, and

a) Not run away!

b) Not to harbor people from cholera places.

c) Not to visit a house in which there is cholera.

d) Still less eat or drink anything in such a house.

e) Especially, to take nothing, food, linen, laundry, playthings, or anything else, from house in which there is cholera.

f) To avoid in every way anything that may disturb digestion; therefore:

Avoid taking cold, and sudden cooling off after being heated.

Do not sit up late at night with friends (drinking cold beer, for example).

Do not wear clothing that is very thin, and do not take off underclothing suddenly.

On no account bathe in running water. Water courses often bear the germs of cholera.

Avoid collections of people, fairs, festivals, etc. of every kind.

4. All kinds of food are to be avoided that may cause catarrh of the stomach and intestines; so also, over-eating and over-drinking are to be avoided.